REMARKS

The Office examined claims 29. Claims 23-29 are allowed and claims 1-22 are rejected. With this paper, none of the claims are canceled and one new claim is added, so that claims 1-30 remain in the application.

Claim Objections

On page 2 of the Office Action, claim 13 is objected to because the limitation "the predetermined rule" lacks sufficient antecedent basis. Applicant has amended claim 13 to recite "the predetermined encoding rule", which finds antecedent support in claim 2, from which it now depends. Accordingly, applicant respectfully requests that the objection to claim 13 be reconsidered and withdrawn.

Claim Rejections under 35 USC §112

On pages 2-3 of the Office Action, claims 1-2 are rejected under 35 USC §112, first paragraph, as failing to comply with the enablement requirement. Specifically, claims 1-2 recite the limitation "...on the part of the transmitter...".

Applicant respectfully submits that the phrase "...a correlation step on the part of the transmitter..." contains a translation mistake from the German language of the PCT application to English. Applicant has reviewed the file history of the current application and has found that the mistake appeared in the certified translation. The original German wording "... einem Korrelationsschritt auf der Seite des Empfängers" correctly states that the correlation step is performed by the receiver.

The reasoning presented by the Office on page 2 of the Office Action suggests that the Office also correctly assumes that the correlation step is performed by the receiver, as disclosed in the specification and Figure 4. Applicant, therefore, submits that the enablement issue with regard to claims 1-2 is merely due to a translation error, which applicant has corrected by amendment herein. Accordingly, applicant respectfully requests that the rejection of claims 1-2 under 35 USC §112, first paragraph, be reconsidered and withdrawn.

Claim Rejections under 35 USC §102

At pages 3-9 of the Office Action, claims 1, 5-12, 17, 20 and 22 are rejected under 35 USC §102(e) as being anticipated by Richards et al. (US Patent 6,950,485, hereinafter Richards). Of the claims so rejected, only claims 1 and 17 are independent claims.

In addition to the amendment described above, applicant has amended claim 1 to remove recitation of the phrase "information transmission"; dependent claims 2-16 have been similarly amended. Claim 1 is also amended to clarify that the individual pulses that partially overlap are from "said pulse group". Claim 17 is amended to reflect the transmitter characteristics required for performing the method of claim 1 in a grammatically clearer manner. Support for the amendments can be found in the specification as published, such as par. [0016], [0017], [0037] and [0061], and also Fig. 4. No new matter has been introduced by way of amendment.

To the extent that the novelty rejection might be applied to the claims, as amended, it is respectfully traversed for the following reasons.

The Office asserts that Richards discloses the feature of claim 1 of a first encoding step, "in which a pulse group, which is formed from a predetermined number of individual pulses in such a way that the individual pulses of the pulse group partially overlap in respect of time after the pulse forming operation, is encoded in dependence on values of a random number sequence". The Office points to Fig. 21C of Richards for the disclosure of "areas where overlapping occurs and non-overlap in time". Applicant respectfully submits, however, that the Office is incorrectly assuming that Fig. 21C shows individual pulses of a pulse group, as claimed. Applicant respectfully submits that there is no basis for such an assumption. In fact, Fig. 2B of Richards shows that within the time interval TF of a frame there is only *one* pulse. The pulse position T1 (i.e., the time span between the beginning of the frame and the occurrence of the pulse maximum), may be selected to deviate from a nominal pulse position T0 in accordance with a given code (see Richards col. 6, lines 42-54).

Applicant respectfully submits that the Office is further mistaken in assuming that pulses shown in Fig. 21C are encoded in dependence on values of a random number

sequence together, implying a use of the same code. Applicant provides a detailed analysis of this below.

First, it is important to understand what is actually represented by Figures 21A to 21C of Richards. The brief description of Figs. 21A to 21C mentions that these Figures serve to "illustrate code mapping and timing considerations in a system designed without the E/L function in accordance with another embodiment of the present invention". As a side note, "E/L" refers to an early-late signal as mentioned in column 12, lines 22-38. As described therein, provision of an E/L circuitry allows an ASIC chip that integrates a coarse delay, a fine delay, and combiner functions (see Richards Fig. 8 and col. 10, lines 32-43) to cover a full 100 % coding span in a pulse-position-modulation (PPM) coding scheme. Basis of the PPM scheme are illustrated in Figs. 1, 2A, and 2B, and explained in col. 6, line 8 to col. 7, line 29 of Richards.

Second, returning to the actual content of Figs. 21A-C, it becomes clear that Fig. 21C does not represent overlapping individual pulses of a group of pulses. In particular, claim 1 requires that *pulses of said pulse group* overlap in time after a pulse forming step performed during encoding. In contrast, reference labels 2110 and 2112 in Fig. 21 C point to allowed code positions (*not* actual pulses) of two different codes. An allowed code position is a position (along a time axis of a defined periodically repeated time interval) at which an individual pulse *may* be placed when coded with a given code. As Fig. 21B of Richards shows, for a certain pulse, a certain code position may be reserved in accordance with a respective selected code. The fact that the allowed code positions under reference labels 2110 and 2112 are shifted relative to each other does not at all imply that there are two or more pulses of a pulse group generated with an overlap in time. The "time slip" between the two patterns 2110 and 2112 implies that Fig. 21C contemplates two different codes, and the pertaining description discusses their correlation to each other. That is, when encoding according to code 2110 one may use certain time intervals for positioning a single pulse, and when encoding according to code 2112 one may use certain other time intervals for positioning a single pulse. These allowed time intervals of the different codes may have some overlap. However, this overlap is different from the overlap between *individual pulses of a pulse group,* as claimed. There is no disclosure or suggestion in Richards that different pulses of

different codes may actually overlap. In fact, the method of Richards must avoid actual pulse overlap between pulses of different codes in order to avoid a correlation between different pulses of different codes, which would give rise to disturbance of a signal transmission.

In other words, to point out the difference between the method of claim 1 and that of Richards, one might say that the method of claim 1 would require an overlap of different pulses on only one of the two shown traces of Fig. 21B, 2110 or 2112. In Richards, however, there is no group of individual pulses that is formed and encoded with one given code such that the individual pulses of the group overlap each other, as required by the method of claim 1. Applicant would like to point out that where Richards speaks of an "ensemble of pulses" (col. 6, line 55-65), he refers to a sequence of single pulses repeatedly sent with identical pulse position (information) in different time frames, and which are integrated on the receiver side to increase the signal-to-noise ratio of reception.

The Office further refers to col. 7, lines 15-20, and Fig. 1A to substantiate the perception that the receiver of Richards is capable of creating a signal pattern that corresponds to a full pulse group to be expected when using the same values of a random number sequence as used on the transmitter side. However, it should be noted first that since Richards does not disclose forming a pulse group of individual pulses, as discussed above, the signal patterns generated by the receiver of this document do not represent a signal pattern corresponding to a full pulse group of individual pulses which overlap in time, as claimed.

Furthermore, applicant respectfully points out that, as known in the art, a receiver generates a signal pattern according to a single code agreed on with the transmitter. Different codes serve to distinguish (possibly parallel) communications targeted to different receivers. A particular receiver only uses one assigned code for reception of a particular transmission. Accordingly, the receiver of Richards would never be able to generate a signal pattern corresponding to a pulse group of overlapping individual pulses, because overlap according to Richards is only possible between pulses of different codes, and not between pulses of one and the same code. Since the receiver

uses only one code for decoding a signal received from the transmitter, there is no overlap of pulses that could be represented in the signal pattern used for the correlation step on the receiver side.

In view of the above, applicant respectfully submits that claim 1, as amended, is not anticipated by Richards. Independent claim 17, as amended, recites similar features as claim 1 and is rejected for the same reasons as claim 1. For at least the reasons provided above with regard to claim 1, applicant respectfully requests that the rejection of claims 1 and 17 under 35 USC §102(e) be reconsidered and withdrawn.

Claims 5-12, 20 and 22 ultimately depend from claims 1 or 17 and recite additional features not recited in claims 1 and 17. For at least the reasons provided above with regard to claims 1 and 17, applicant respectfully requests that the rejection of claims 5-12, 20 and 22 under 35 USC §102(e) be reconsidered and withdrawn.

Claim Rejections under 35 USC §103

At pages 9-10 of the Office Action, claim 2 is rejected under 35 USC §103(a) as being unpatentable over Richards in view of Chen (US Patent 6,925,130).

Claim 2 depends from claim 1 and recites additional features not recited in claim 1. As discussed above, Richards fails to disclose or suggest every feature of claim 1. Chen fails to disclose or suggest the features lacking in Richards, e.g. "...a first encoding step on the part of the transmitter, in which a pulse group, which is formed from a predetermined number of individual pulses in such a way that the individual pulses of said pulse group partially overlap in respect of time after the pulse forming operation, is encoded in dependence on values of a random number sequence...". For at least the reasons provided above with regard to claim 1, applicant respectfully requests that the rejection of claim 2 under 35 USC §103(a) be reconsidered and withdrawn.

At page 10 of the Office Action, claim 12 is rejected under 35 USC §103(a) as being unpatentable over Richards in view of Roberts (US Publication 2006/0166619).

Claim 12 depends from claim 1 and recites additional features not recited in claim 1. As discussed above, Richards fails to disclose or suggest every feature of claim 1. Roberts fails to disclose or suggest the features lacking in Richards, e.g. "...a

first encoding step on the part of the transmitter, in which a pulse group, which is formed from a predetermined number of individual pulses in such a way that the individual pulses of said pulse group partially overlap in respect of time after the pulse forming operation, is encoded in dependence on values of a random number sequence...". For at least the reasons provided above with regard to claim 1, applicant respectfully requests that the rejection of claim 12 under 35 USC §103(a) be reconsidered and withdrawn.

At page 11 of the Office Action, claim 15 is rejected under 35 USC §103(a) as being unpatentable over Richards.

Claim 15 ultimately depends from claim 1 and recites additional features not recited in claim 1. As discussed above, Richards fails to disclose or suggest every feature of claim 1, e.g. "...a first encoding step on the part of the transmitter, in which a pulse group, which is formed from a predetermined number of individual pulses in such a way that the individual pulses of said pulse group partially overlap in respect of time after the pulse forming operation, is encoded in dependence on values of a random number sequence...". For at least the reasons provided above with regard to claim 1, applicant respectfully requests that the rejection of claim 15 under 35 USC §103(a) be reconsidered and withdrawn.

At pages 11-12 of the Office Action, claim 16 is rejected under 35 USC §103(a) as being unpatentable over Richards in view of Yamaguchi (US Publication 2004/0179580).

Claim 16 depends from claim 1 and recites additional features not recited in claim 1. As discussed above, Richards fails to disclose or suggest every feature of claim 1. Yamaguchi fails to disclose or suggest the features lacking in Richards, e.g. "...a first encoding step on the part of the transmitter, in which a pulse group, which is formed from a predetermined number of individual pulses in such a way that the individual pulses of said pulse group partially overlap in respect of time after the pulse forming operation, is encoded in dependence on values of a random number sequence...". For at least the reasons provided above with regard to claim 1, applicant

respectfully requests that the rejection of claim 16 under 35 USC §103(a) be reconsidered and withdrawn.

At page 12 of the Office Action, claim 21 is rejected under 35 USC §103(a) as being unpatentable over Richards in view of Richards et al. (US Publication 2003/0194979, hereinafter Richards '979).

Claim 21 depends from claim 17 and recites additional features not recited in claim 17. As discussed above, Richards fails to disclose or suggest every feature of claim 17. Richards '979 fails to disclose or suggest the features lacking in Richards, e.g. "...the control unit is additionally adapted to control the pulse generator and the encoding unit to form the coded pulse group from a predetermined plurality of single pulses in dependence on the values of the random number sequence in such a way that the single pulses of said pulse group overlap in time after the pulse formation." For at least the reasons provided above with regard to claim 17, applicant respectfully requests that the rejection of claim 21 under 35 USC §103(a) be reconsidered and withdrawn.

New Claim

Applicant has added new claim 30, which is dependent on allowed claim 23 and which recites similar features as independent claims 1 and 17. Support for the new claim can be found in the specification as published, such as par. [0016], [0017], [0037] and [0061], and also Fig. 4. For at least the reasons provided above with regard to claims 1 and 17, applicant respectfully submits that claim 30 is also patentable.

Allowable Subject Matter

At page 12 of the Office Action, the Office indicates that claims 23-29, and 19-23 are allowed. Applicant would like to express appreciation to the Office for the allowed claims.

Applicant has amended allowed claim 23 to make minor grammar changes which applicant believes produce a more clear and understandable claim. No new matter has been introduced by way of amendment and the scope of the claim is in no way altered. Therefore, applicant respectfully submits that claim 23 is still allowable.

CONCLUSION

For all the foregoing reasons it is believed that all of the claims of the application are in condition for allowance and their passage to issue is earnestly solicited.

Respectfully submitted,

6.24.10
Date

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